



4th Frederick Workshop on the Cell Biology of Viral Entry

May 2-5, 2004
NCI-Frederick, Frederick, MD

Co-Sponsors: NCI Center for Cancer Research, NIH Office of AIDS Research, and the University of Alabama, Center for AIDS Research

Organizers: Robert Blumenthal, Ph.D. and Eric Hunter, Ph.D.

PROGRAM

SUNDAY, MAY 2, 2:00 PM

NCI-Frederick Conference Center, Building 549

Session I Virus Structure and Entry

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| 2:00-2:10 pm | Chair: Alasdair Steven (NIH) |
| 2:10-2:35 pm | Michael Rossmann (Purdue), <i>Discrimination Among Rhinovirus Serotypes for a Variant ICAM-1 Receptor Molecule</i> |
| 2:35-2:50 pm | David Belnap (NIH, Bethesda), <i>Structural Characterization of the Poliovirus Cell-Entry Pathway</i> |
| 2:50-3:10 pm | Coffee Break |
| 3:10-3:35 pm | Felix Rey (CNRS, France), <i>Class II Viral Fusion Proteins: Conformational Changes and Protein-Protein Interactions Drive the Membrane Fusion Reaction</i> |
| 3:35-3:50 pm | Margaret Kielian (Albert Einstein School of Medicine), <i>The Alphavirus Membrane Fusion Protein: Correlating Structure and Function</i> |
| 3:50-4:15 pm | Steve Fuller (Oxford, UK), <i>Cryo-Electron Microscopic Views of Virus Structure and Virus Entry for Flaviviruses and Alphaviruses</i> |
| 4:15-6:00 pm | Round Table Discussion |

SUNDAY, MAY 2, 7:30 PM

Holiday Inn-Ft Detrick

Session II Endogenous Retrovirus Evolution

- 7:30-7:40 pm Chair: Robert Blumenthal Ph.D. (NCI-Frederick)
- 7:40-8:30 pm Speaker: Dr David Kabat Ph.D. (Oregon Health and Science University, Portland, OR), *Pervs Infect Cells Lacking Receptors By a Transactivation Route: Implications for Xenotransplantation and Endogenous Retrovirus Evolution*
- 8:30-9:00 pm Round Table Discussion
- 9:00-10:00 pm Poster Session I

MONDAY, MAY 3, 8:30 AM

NCI-Frederick Conference Center, Building 549

Session III Viral Envelope Structure and Function

- 8:30-8:40 am Chair: Ed Berger (NIH)
- 8:40-9:05 am James Hoxie (UPenn), *Modulation of HIV Envelope Glycoprotein Fusion By Membrane-Interactive Domains in the gp41 Cytoplasmic Tail*
- 9:05-9:30 am Eric Hunter (Univ of Alabama), *Mutational Analyses of HIV-1 gp41 Define a Minimal Membrane-Anchor and a Topological Model for It and the Tryptophan-Rich Membrane Proximal Domain*
- 9:30-9:55 am Robert Lamb (Northwestern), *Activation of a Class I Viral Fusion Protein Is Modulated By Transmembrane Signaling from the Cytoplasmic Tail*
- 9:55-10:15 am Coffee Break
- 10:15-10:40 am Yechiel Shai (Weizmann Institute, Israel), *Core Structure and Unfolding By Truncated Forms and a Soluble Form of the Full Length of HIV-1 gp41 in Solution and in LPC Micelles*
- 10:40-11:05 am Lucas Tamm (UVA, Charlottesville), *Membrane Interactions of Influenza Hemagglutinin Fusion Peptides*
- 11:05 am-1:00 pm Round Table Discussion
Discussants: Dr. Eric Freed, Dr. Yossef Raviv
- 1:00-2:00 pm Lunch

MONDAY, MAY 3, 2:00 PM

NCI-Frederick Conference Center, Building 549

Session IV Viral Envelope Glycoproteins and Their Receptors

- 2:00-2:10 pm Chair: John Moore (Cornell Medical School, NY)
- 2:10-2:35 pm Michael Farzan (Harvard Medical School), *A Receptor for the SARS Coronavirus*
- 2:35-3:00 pm Patricia G. Spear (Northwestern University), *Mutations in Herpes Simplex Virus gD That Alter Usage of Entry Receptors and Cell Tropism*
- 3:00-3:25 pm Pin-Fang Lin (Bristol-Myers Squibb), *Structure Modulations of Envelope Glycoprotein by Small Molecule HIV Attachment Inhibitors*
- 3:25-3:45 pm Coffee Break
- 3:45-4:10 pm Hana Golding (CBER), *Development of New Entry Inhibitors Targeting the CCR5 Coreceptor*
- 4:10-4:45 pm Leonid Margolis (NIH), *Microbial Interactions: Copathogens Affect HIV-1 Entry By Modulating Cytokine Network*
- 4:45-4:55 pm John Moore, *CCR5 Inhibitors in the Macaque Model*
- 4:55-6:30 pm Round Table Discussion
- 6:30-8:00 pm Poster Session II

TUESDAY, MAY 4, 8:30 AM

NCI-Frederick Conference Center, Building 549

Session V Viral Fusion

- 8:30-8:40 am Chair: Fred Cohen (Rush Medical College)
- 8:40-9:05 am Judith White (UVA), *Sequential Roles of Receptor Binding and Low pH in Forming Prehairpin and Hairpin Conformations of a Model Retroviral Envelope Glycoprotein*
- 9:05-9:30 am Grigory Melikyan (Rush), *Dissecting the Steps of Avian Sarcoma and Leukosis Virus Env-Induced Fusion*
- 9:30-9:55 am Robert Blumenthal (NCI), *Conformational Intermediates and Fusion Activity of HIV-1 Env*
- 9:55-10:15 am Coffee Break

TUESDAY, MAY 4, 8:30 AM (continued) NCI-Frederick Conference Center, Building 549

Session V Viral Fusion (continued)

- 10:15-10:40 am Michael Whitt (University of Tennessee Health Sciences), *Pushing the Envelope: An Analysis of Regulated and Unregulated Fusion Events Mediated By Viral Membrane Proteins*
- 10:40-11:05 am Chris Broder (USUHS), *Blocking Hendra and Nipah Virus Fusion and Infection*
- 11:05-11:15 am Shibo Jiang (New York Blood Center), *Identification of Anti-SARS-CoV Peptide and Its Mechanism of Action*
- 11:15 am-1:00 pm Round Table Discussion
- 1:00-2:00 pm Lunch

TUESDAY, MAY 4, 2:00 PM

NCI-Frederick Conference Center, Building 549

Session VI Mechanisms of Neutralization

- 2:00-2:10 pm Chair: Leonid Chernomordik (NIH)
- 2:10-2:35 pm Peter Kwong (VRC, NIH), *HIV-1 Envelope Structure*
- 2:35-3:00 pm Joseph Sodroski (Dana Farber), *Mechanism of HIV-1 Neutralization By Antibodies*
- 3:00-3:25 pm Susan Zolla-Pazner (NYU), *The Role of V2 and V3 in Virus Infection*
- 3:25-3:45 pm Coffee Break
- 3:45-4:10 pm Mitko Dimitrov (NCI), *Novel Cross-Reactive HIV-1 Neutralizing Human Monoclonal Antibodies*
- 4:10-4:35 pm Robert Doms, *Virus and Host Factors That Determine HIV Sensitivity to Entry Inhibitors and Neutralizing Antibodies*
- 4:35-6:00 pm Round Table Discussion
- 6:00-7:30 pm Poster Session III

WEDNESDAY, MAY 5, 8:30 AM

NCI-Frederick Conference Center, Building 549

Session VII Membrane Trafficking and Viral Entry

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| 8:30-8:40 am | Chair: Josh Zimmerberg (NIH) |
| 8:40-9:05 am | Ari Helenius (ETH, Zurich), <i>Dynamics and Behavior of Caveolae During Endocytosis of Virus</i> |
| 9:05-9:15 am | Jack Nunberg (University of Montana), <i>Structure and Function of the Arenavirus Envelope Glycoprotein Complex</i> |
| 9:15-9:40 am | Walter Mothes (Yale), <i>Retroviral Surfing - A Role for the Actin Cytoskeleton in Virus Capture</i> |
| 9:40-10:00 am | Coffee Break |
| 10:00-10:25 am | Morgane Bomsel (CNRS, Université René Descartes), <i>An Agrin and Integrin -Dependent Virological Synapse For HIV-1 Transcytosis</i> |
| 10:25-10:50 am | Mark Marsh (London), <i>Endocytosis of Cellular and Viral Chemokine Receptors</i> |
| 10:50-11:15 am | James Hildreth (Johns Hopkins), <i>Presence of Lipid Rafts on HIV and SIV Particles: Implications for Virus Cell Interactions</i> |
| 11:15 am-1:00 pm | Round Table Discussion |
| 1:00 pm | Adjourn |